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Bleaching the Wings of Lepidoptera.

In the common method of destroying the scales on the wings of Lepidoptera, by means of caustic alkaline solutions, for the purpose of studying the venation of the wings, there is danger of not arresting the action at the proper moment, and consequently danger of destroying not only the portions which it is desirable to remove, but also the scale-supporting membrane, and even the delicate veins themselves. The use of a modification of the chlorine bleaching process, commonly employed in cotton bleacheries, obviates the necessity of removing the scales at all, and leaves the wing perfect.

There are many ways in which this bleaching can be done, but I have found the most convenient method of applying the chlorine to be the following. The wings must first be soaked a few moments in pure alcohol, in order to dissolve out the oily matter in them. If this is not done, the surface of the wings acts as a repellent, and will not be moistened by an aqueous solution. When the wings have become thoroughly soaked by the alcohol, they are ready to be removed to a solution of common bleaching powder. This bleaching powder is sold by druggists as "chloride of lime," but it is really a mixture of calcic hypochlorite, calcic chloride, and calcic hydrate. Ten parts of water dissolve the first two compounds, leaving nearly all the third suspended in the solution. The solution should be made with cold water, filtered, and kept in a tightly corked bottle till required for use. When the wings are transferred to this solution the bleaching commences, and in an hour or two the wings are devoid of markings, except when the colors have been photographed on the membrane, although the veins retain

a light brown color. This is due to the fact that chlorine cannot quite decolorize animal matter or any substance containing nitrogen, as it does vegetable tissue.

After the color has sufficiently disappeared from the wings, they should be transferred to a wash composed of one part of strong hydrochloric acid to ten parts of water. Here it may be added, that in case the bleaching does not readily commence upon immersion in the bleaching powder solution, the action may be hastened by a previous dipping in the dilute hydrochloric acid. In the bleaching solution, a crust of calcic carbonate, formed by the union of the calcic hydrate of the solution and the carbonic dioxide of the air, is deposited on the wings, and this calcic carbonate the final wash in the dilute acid will remove. As soon as the calcic carbonate has disappeared, and all bubbling, consequent upon its decomposition by the hydrochloric acid, has ceased, the wings should be well soaked in pure water. They may then be secured on cards with a mucilage of gum tragacanth; or upon glass, by the proper transfers through alcohol and chloroform to Canada balsam.

A solution of sodic hypochlorite, known as *Eau de Labarraque*, or a solution of potassic hypochlorite, known as *Eau de Javelle*, when used in place of the solution of bleaching powder, does not leave a deposit of calcic carbonate on the wings, and thus dispenses with the wash of dilute acid. A solution of zinc hypochlorite acts more delicately than the solution of sodic hypochlorite, and may be used in place of the latter, as may also solutions of aluminic hypochlorite or magnesic hypochlorite.

These bleaching processes preserve the most delicate wings unbroken, and when the specimens are of rare species, "rubbed" wings can be used, the absence of the scales not being evident after bleaching. The costal venation of Hesperidae can be clearly determined in bleached wings.

Provided the wings are not kept too long in the bleaching solution, or in the dilute acid, the scales remain perfect and in position, although rendered so transparent that their presence is scarcely noticeable even with the aid of a lens. That they still remain, is easily proved by examining the torn edge of a

piece of wing under a compound microscope, when the transparent scales will be seen overhanging the edge like shingles upon a broken roof. *Geo. Dimmock.*

(Read before the American Association for the Advancement of Science, at Detroit, Mich., Aug. 14, 1875.)

On the Insect Fauna of the White Mountains.

In a paper published in the July number of PSYCHE, I drew attention to some of the questions raised by studies on the insects of Mount Washington. In concluding, I suggested the probable identity of *Agrotis opipara* with *A. islandica*, and *Agrotis scropulana* with *Pachnobia carnea*. I am answered on page 85 of this journal by the remark that "in making synonymical corrections, we want certainties, not probabilities." This does not apply to myself, because I purposely made no synonymical correction in these instances. As to my suggestions, the first has proved itself correct. A specimen of *Agrotis islandica* sent me by Mr. H. B. Mœschler, from Labrador, cannot possibly be distinguished from my specimen of opipara from Mount Washington. The markings are equally heavy and distinct in both. I justify my remark "obviously unsafe", in the paper referred to, by pointing out that in Dr. Staudinger's original paper on *A. islandica* (Stett. Ent. Zeit., 1857, p. 232), all the differences described on p. 85 of PSYCHE are considered varietal of islandica. Staudinger says of islandica, "This new Agrotis varies in size, still more in the markings, but most of all in the color." Specimens are described with unicolorously dark primaries, becoming almost smoky brown; this will account for the "gray" specimens differing from the "cinereous" ones. I have Dr. Packard's Iceland specimens of islandica, which formed the basis of Mr. Morrison's knowledge of the species. They belong apparently to an inconspicuously marked form, which seems to vary in color and depth of marking somewhat as velleripennis does. The structure is the same in these specimens of islandica from Iceland and opipara from Mount Washington; the Labrador specimen might have been taken on Mount Washington, and the Mount Washington in Labrador, for all essential points of distinction between them.